b-jet tagging w/ secondary vertex

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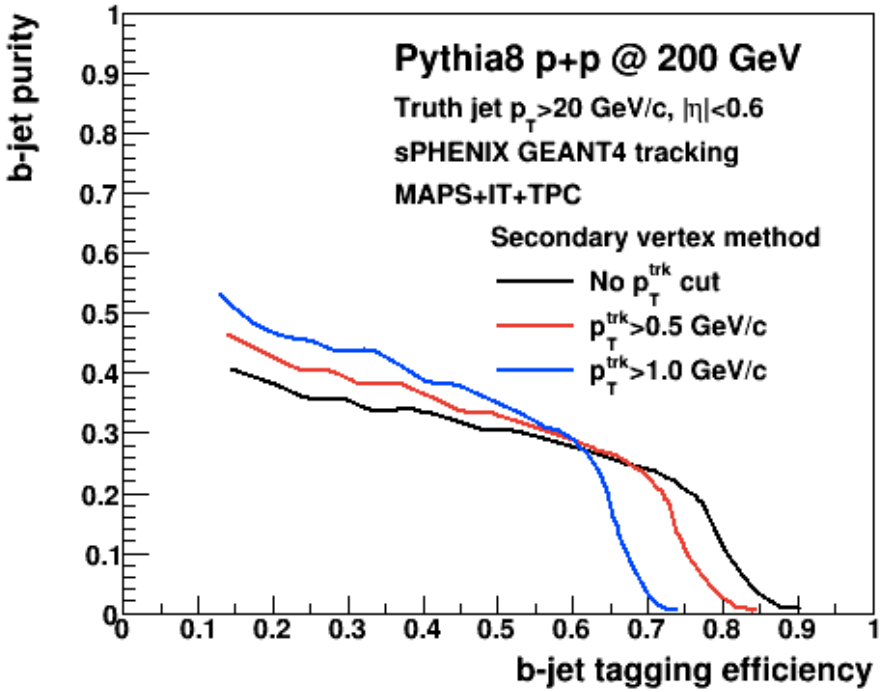
Reminder (purity vs. efficiency)

- 3M events (Pythia8 MB)
  - HardQCD::all, PhaseSpace:pTHatMin = 10.0
  - MAPS+IT+TPC configuration

distance between 2nd vtx and prim. vtx < 1 cm

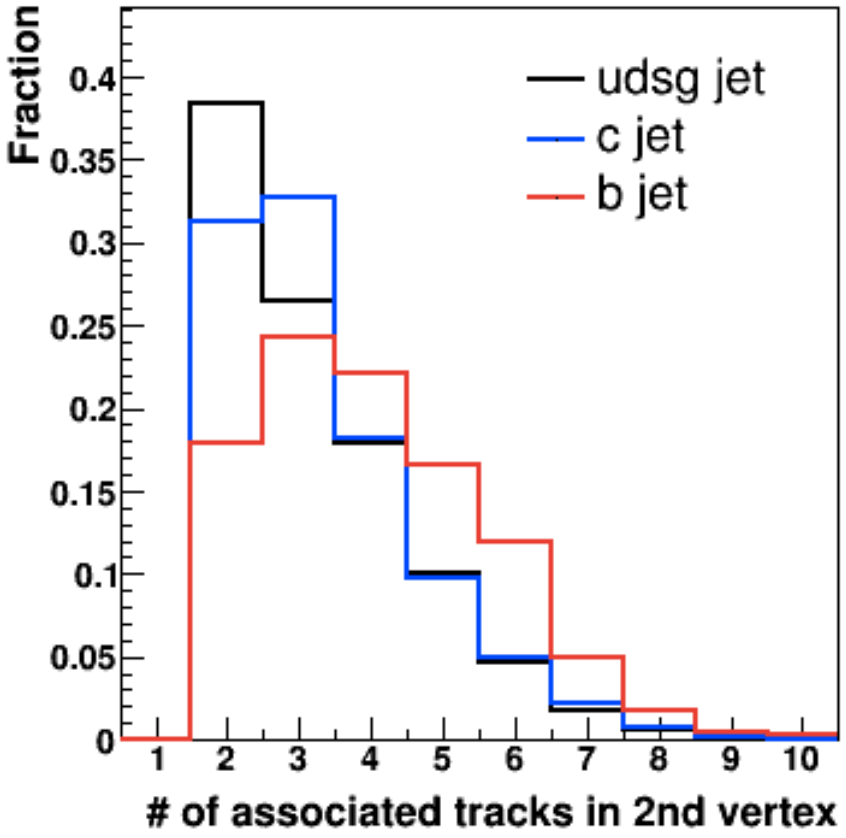


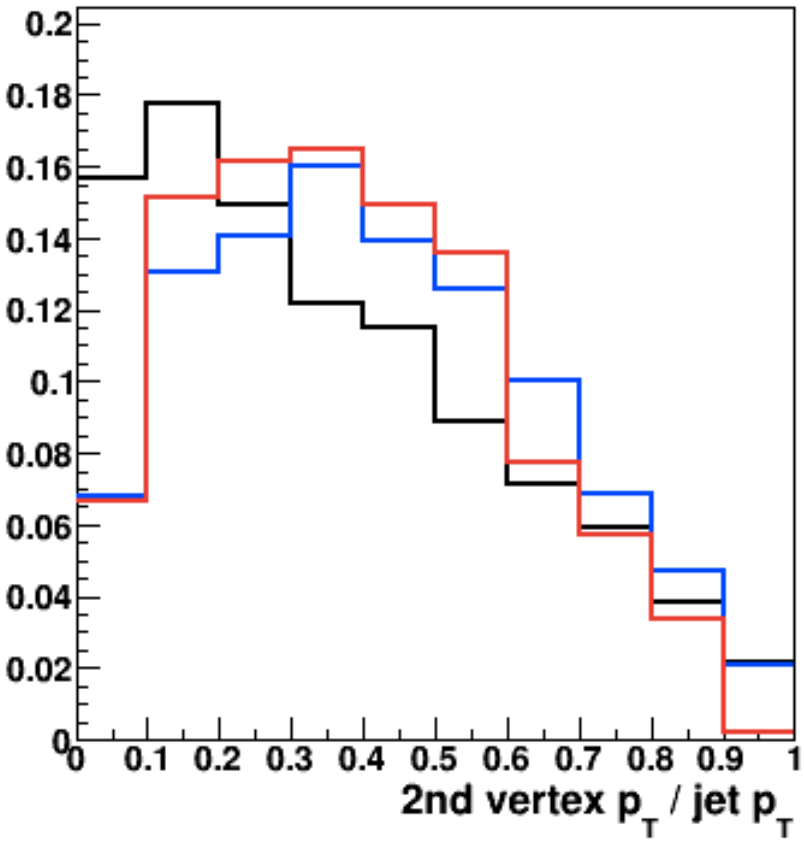
- Higher track p_T cut for 2nd vertex help to enhance b-jet purity

Vertex p_T / Jet p_T

- Instead of applying a hard p_T cut on track,
  ratio between vertex p_T and jet p_T can be used to reject vertices from low mass particles
  - reject events of small vtx p_T/jet p_T (test w/ 0.15)

deviation from prim. vertex > 2 sigma





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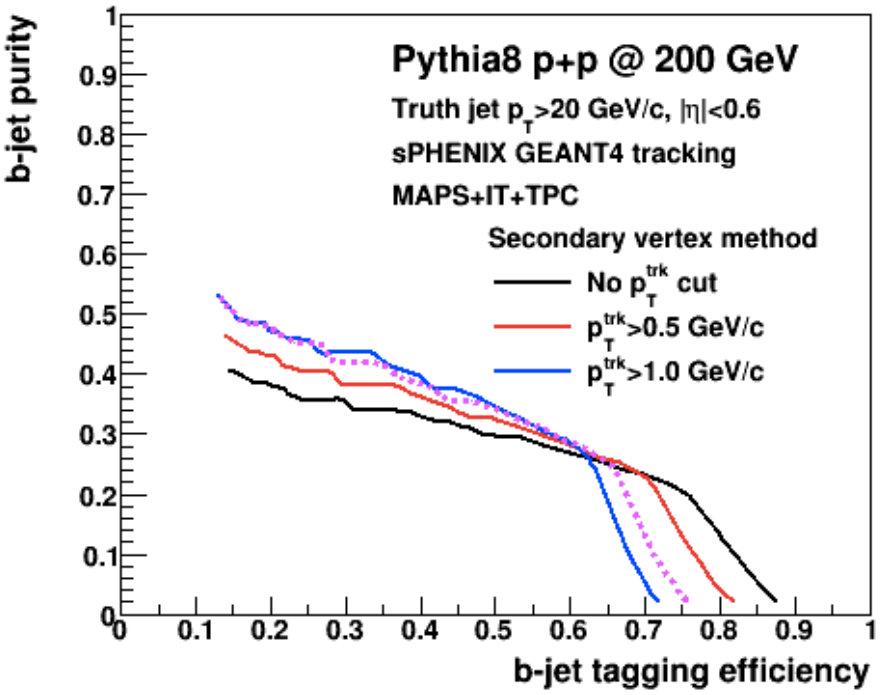
  - similar performance (magenta curve) with p_T>1.0 GeV/c cut



2nd vertex mass

- Instead of applying a hard p_T cut on track,
  ratio between vertex p_T and jet p_T can be used to reject vertices from low mass particles
  - reject events of small vtx p_T/jet p_T (test w/ 0.15)
  - similar performance (magenta curve) with p_T>1.0 GeV/c cut
- 2nd vertex mass distribution (deviation>3.5 sigma)
  - although purity is ~0.27, shapes are clearly different between flavors